

A Robust Separation Assurance (SA) Architecture Using Integrated Airborne and Ground SA Concepts, Phase I

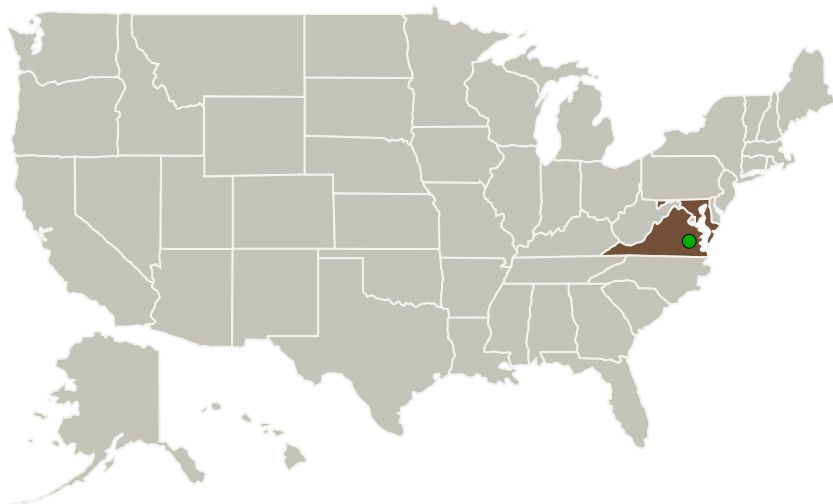
Completed Technology Project (2011 - 2011)



Project Introduction

Intelligent Automation, Inc. proposes a robust SA architecture that uses integrated airborne and ground-based SA concepts such that SA functions are switched between airborne or ground-based activity as the system monitors traffic, network characteristics such as data drop rates and latency, and time to Loss of Separation (LOS). The uniqueness of an integrated air-ground SA concept is that the SA functional roles are changed between the SA stakeholders (i.e., ATC, Pilot and service providers) to maintain robustness of the SA performance under degraded network conditions. The proposed SA architecture consists of a Network and SA Performance Metric Monitor (PMM), which monitors short-horizon performance metrics of the network and the currently used SA concept. It also consists of an Air-Ground Concept Manager (AGCM), which decides if one or multiple SA concepts are to be applied in a given airspace (i.e., center, flow corridor or transition airspace) based on the observed and estimated network and SA performance metrics. The proposed mechanism consists of dividing airspace into SA sectors, where SA activity in each sector is managed based on a single SA concept. The approach delineates the SA functions or roles between the stakeholders for each SA sector and addresses the transfer of control between the SA stakeholders as the aircraft flies through the SA sectors.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Intelligent Automation, Inc.	Lead Organization	Industry	Rockville, Maryland
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Maryland	Virginia

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart(<https://techport.nasa.gov/file/137925>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Intelligent Automation, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

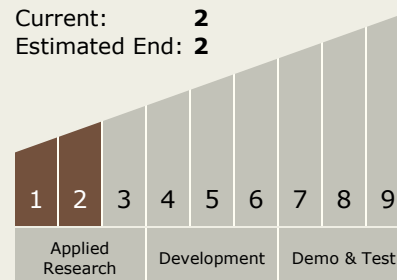
Carlos Torrez

Principal Investigator:

Michel Santos

Technology Maturity (TRL)

Start: **1**
Current: **2**
Estimated End: **2**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
 - └ TX06.6 Human Systems Integration
 - └ TX06.6.1 Human Factors Engineering

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System